material, the second set of piezoelectric elements senses the solid-state rotational rate sensor device.

3. (Previously Presented) The solid-state rotational rate sensor device of claim 2, wherein the first and second sets of piezoelectric elements are configured on a thin-film piezoelectric material.

4. (Currently Amended) The solid-state rotational rate sensor device of claim 2, further comprising a third set of piezoelectric elements <u>on the silicon chip</u> that sense a force generated by the first set of the piezoelectric elements.

5. (Currently Amended) The solid-state rotational rate sensor device of claim 4, wherein a signal sensed by at least one set of the second and third sets of piezoelectric elements is fed back to the first set of piezoelectric elements <u>through an electronic feedback circuit</u>.

6. (Previously Presented) The solid-state rotational rate sensor device of claim 2, wherein the electrical signal applied on the first set of piezoelectric elements is variable to modify a mechanical resonant frequency of the solid-state rotational rate sensor device.

7. (Previously Presented) The solid-state rotational rate sensor device of claim 2, wherein the piezoelectric material of the first set of the piezoelectric elements includes conductive electrodes placed on approximately opposite sides such that application of the electrical signal to the conductive electrodes causes a longitudinal variation of the piezoelectric material.

8. (Previously Presented) The solid-state rotational rate sensor device of claim 2, wherein the piezoelectric material is a thin-film piezoelectric material with a thickness of less than 10 microns and includes conductive electrodes placed on approximately opposite sides such

that application of the electrical signal to the conductive electrodes causes a longitudinal variation of the thin-film piezoelectric material.

9. (Previously Presented) The solid-state rotational rate sensor device of claim 2, wherein the piezoelectric material is a thin-film piezoelectric material comprising a family of Lead-Zirconate-Titanate (PZT) compounds.

10. (Currently Amended) The solid-state rotational rate sensor device of claim 2, wherein the solid-state device includes a semi-rigid member fixed along a first edge to a proof mass and fixed along a second edge to the silicon chip.

11. (Previously Presented) The solid-state rotational rate sensor device of claim 10, wherein the semi-rigid support comprises a tuning fork.

12. (Previously Presented) The solid-state rotational rate sensor device of claim 10, wherein the semi-rigid support comprises a vibrating cup.

13. (Previously Presented) The solid-state rotational rate sensor device of claim 10, wherein the semi-rigid support comprises a comb structure.

14. (Currently Amended) The solid-state rotational rate sensor device of claim 10, wherein the semi-rigid support comprises an annular ring fixed along its outer circumference to the silicon chip and fixed along its inner circumference to a cylindrical proof mass.

15. (Currently Amended) A method of sensing a rotational rate of a solid-state device formed by a plurality of thin-film piezoelectric elements on an integrated silicon chip having a first set of piezoelectric elements, a second set of piezoelectric elements, and a third set of piezoelectric elements, comprising the steps of:

actuating the first set of piezoelectric elements by a first electrical signal; and

sensing rotational rate by the second and third sets of piezoelectric elements while rejecting spurious noise.

16. (Previously Presented) The method of claim 15, further comprising the steps of generating a second electrical signal by the second set of piezoelectric elements proportional to a mechanical force along a first direction, and generating a third electrical signal by the third piezoelectric elements proportional to the mechanical force along a second direction, wherein the second direction is orthogonal to the first direction, and wherein phase of the third electrical signal shifts relative to the second electrical signal in response to rotation movement of the solid-state device around a third direction, and the third direction is orthogonal to both the first direction and the second direction.

17. (Previously Presented) The method of claim 15, further comprising the steps of connecting the second and third electrical signals to a phase-shift detection circuit, and generating an electrical output signal in proportion to a shift of the phase.

18. (Currently Amended) A rotational rate sensor, comprising:

<u>an integrated silicon chip;</u>

a proof mass;

a first piezoelectric element for generating a force on the proof mass along a first direction by a first electrical signal;

a second piezoelectric element for generating a second electrical signal in proportion to the force on the proof mass along the first direction;

a third piezoelectric element for generating a third electrical signal in proportion to the force on the proof mass along a second direction; and